

Thysanoptera diversity: survey of the species occurring at Parque Estadual de Itapuã, Viamão, RS, Brazil

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Introduction

The order Thysanoptera comprises about 5500 described species (Mound, 2002, this volume), and possibly there are three times more (Mound & Palmer, 1992). These species are grouped in two suborders: Terebrantia and Tubulifera, characterized by the presence or absence of an external ovipositor, respectively. Thrips are small to minute insects, adults ranging from about 1 mm to 14 mm; the asymmetry of their mouthparts is the most remarkable feature, only the left mandible is present. Adults have typically four slender wings, with a long fringe of marginal cilia (Lewis, 1973). Field populations of most species are bisexual, but females often predominate and reproduction is partly or wholly parthenogenetic (Ananthakrishnan, 1979). Thrips are found in all kinds of vegetation: flowers, foliage, under bark of live or dead trees, litter, in stored bulbs and a few form galls or distort leaves. Almost all of them are phytophagous, only a few being predatory. Some species constitute serious agriculture pests. However, others species are considered beneficial, since they may facilitate pollination or decomposition (Palmer et al., 1989; De Santis, 1965). Thrips are cosmopolitan, with most species found in tropical regions, many in the temperate zone, but only few in the arctic regions (Lewis, 1973). To preserve biological diversity, our knowledge of the fauna and flora is fundamental, but little data is still available on thrips. According to Harding et al. (1995), there are three levels of activities necessary for effective conservation: (1) qualitative or quantitative observations, record and list existing species based on standard

procedures; (2) follow up over time, using the same methods to establish temporal standards, and (3) periodic monitoring of these patterns to investigate their variation. In our region, there are still problems in establishing the first-level. Besides being a numerous and fascinating group, insects are crucial components in biomass around the world (Dempster, 1991; Samways, 1995). Insect conservation is fundamental, both for maintenance of biodiversity and for a sustainable biosphere (Romanowski & Buss, 1997). Most work on thrips in Brazil has focussed on agricultural pests (Lima, 1940; Monteiro, 1994; Monteiro et al., 1995; Pinent, 1996, 1998). Our indigenous species, are still virtually unknown. As a corollary, most available identification keys refer to temperate species (Mound & Marullo, 1996). Rio Grande do Sul, due to its location in the Neotropical Zoogeographic Region, presents very rich characteristics in its fauna and flora (Fitkau et al., 1969). Noss (1987) states that the best form of preserving species is to preserve representative habitat samples as conservation units.

Study area

The Parque Estadual de Itapuã is located in the Southeast called Basins, more particularly the “Bacia Hidrográfica Guaíba” and the “Lagoa dos Patos”, that make up about 75% of its perimeter. According to Köppen’s system (1948), the climate in the region is subtropical humid, variety Cfa/g’n: colder month average air temperature between -3°C and 18°, average annual rainfall about 1.300 mm and the annual air temperature average 17.5°C. The landscape in the Park is very

varied and influenced by a mixture of geological formations (sandbanks, granitic hills, etc.). Mostly, the vegetation is constituted by forests and fields, which also vary much in terms of height, densities and state of conservation. More than three hundred plant species occur in the Park, of which, *Ficus organensis* (“figueira”), *Erythrina crest-galli* (“Corticeira-do-banhado”), *Syagrus romanzoffiana* (“gerivá”), *Butia capitata* (“butiá”), and the large number of Orchidaceae, Bromeliaceae and Cactaceae deserve mentioning. Itapuá is one of the few areas where the several plant physiognomies that formerly occurred around the Guaíba borders and in the Porto Alegre granitic hills still occur. The diverse ecosystems also shelters many animal species, several threatened with extinction, e.g. *Allouata fusca* (brown howler monkey), *Lutra longicaudis* (otter) and *Caiman latirostris* (yellow throat caiman). The “Lagoa Negra” or Black pond, with 1.750 hectares, is an important refuge for migrant, also hundreds of other, bird species (Rio Grande do Sul, 1997).

Material and Methods

Four routes (500 m long) were established in different kinds of environment: **Route 1** (Pedreira) lowland medium-thick seasonal semideciduous forest (trees up to 20 m high) close to the Guaíba shore line. **Route 2** (Araçá) mix of secondary previously disturbed field and low forest on a granitic hill slope. **Route 3** (Lagoinha) *restinga* woods by sandy dunes and swamps. **Route 4** (Grotta) rupestral vegetation at mid height on a granitic hill. These routes were marked at 100 m intervals, where different microhabitats (litter, flowers, branches and grasses) were sampled monthly, both immediately by the route and 1.5 m away from it. In the laboratory, samples were sorted under the stereomicroscope. Thrips were removed from the plants with a fine brush and transferred to AGA (10 parts 60% ethyl alcohol: 1 part glycerine: 1 part acetic acid). Microscope slides were prepared following Palmer et al. (1989) and Mound & Kibby (1998). Any species that were difficult to identify were

sent for confirmation to Laurence Mound, at CSIRO Entomology, Canberra, Australia.

Results

Field work started June 1999 and continued until June 2001. Data processed so far, yielded 10,512 individuals sampled from June 1999 to April 2001. Among the specimens identified so far, 404 are Thripidae, 120 belong to the family Plaeothripidae, 15 to Merothripidae, 4 to Aeolothripidae and 4 to Heterothripidae (see Table). The microhabitat with the highest thrips abundance was flowers (n=4,763), followed by branches (n=3,473), litter (n=1,471) and grasses (n=805) (see Fig.1).

Thrips species	Microhabitats
THRIPIDAE	
<i>Frankliniella bertelsi</i> (De Santis)	<i>Baccharis patens</i> (Asteraceae), <i>Lantana camara</i> (Verbenaceae)
<i>Frankliniella ?gemina</i> Bagnall	<i>Cordia verbenacea</i> (Boraginaceae)
<i>Frankliniella ?bruneri</i> Watson	Asteraceae, Verbenaceae
<i>Frankliniella insularis</i> Franklin	<i>Dioclea violacea</i> (Leguminosae)
<i>Frankliniella nakaharai</i> Sakimura & O'Neill	<i>Stachytarpheta cayennensis</i> (Verbenaceae)
<i>Frankliniella chamulae</i> Joansen	<i>Dioclea violacea</i> (Leguminosae)
<i>Frankliniella sp.</i>	Lamiaceae
<i>Frankliniella sp.</i>	<i>Dodonea viscosa</i> (Sapindaceae)
<i>Microcephalothrips abdominalis</i> (Crawford)	<i>Stachytarpheta cayennensis</i> (Verbenaceae), <i>Trichoclina catharinense</i> (Asteraceae)
<i>Neohydatothrips flavens</i> Moulton	<i>Dodonea viscosa</i> (Sapindaceae)
<i>Heliothrips haemorrhoidalis</i> Bouché	Polypodiaceae
HETEROTHRIPIDAE	
<i>Heterothrips striatus</i>	<i>Eugenia uniflora</i> (Mirtaceae)
<i>Heterothrips sp.</i>	Litter
<i>Heterothrips sp.</i>	<i>Trichoclina catharinense</i> (Asteraceae), Rubiaceae
AEOLOTHRIPIDAE	
<i>Aeolothrips sp.</i>	<i>Cordia verbenacea</i> (Boraginaceae)
<i>Franklinothrips sp.</i>	<i>Lantana camara</i> (Verbenaceae)
PHLAEOTHRIPIDAE	
<i>Aleurodothrips ?fasciapennis</i> (Franklin)	Litter
<i>Adraneothrips alternatus</i> Hood	Litter
<i>Adraneothrips fuscicollis</i> Hood	Litter
<i>Chamaeothrips ?jucundus</i> Hood	Litter
<i>Craniothrips urichi</i> Bagnall	<i>Leandra australis</i> (Melastomataceae)
<i>Haplothrips ?trelesi</i> Moulton	Asteraceae
<i>Haplothrips fiebrigi</i> Moulton	<i>Chrysanthemum mycones</i> (Asteraceae)
<i>Haplothrips sp.</i>	<i>Polypodium lepidopteris</i> (Polypodiaceae)
<i>Haplothrips sp.</i>	<i>Cordia verbenacea</i> (Melastomataceae), Polypodiaceae
<i>Liothrips ?sambuci</i> Hood	Litter
<i>Preeriella sp.</i>	<i>Hamolepis glutinosa</i> (Gramineae)
<i>Smicrothrips particula</i> Hood	<i>Hamolepis glutinosa</i> (Gramineae)

Table. Thysanoptera species and their respective microhabitats at Parque Estadual Itapuá (30°22'S51°02'W) Viamão, RS, Brazil.

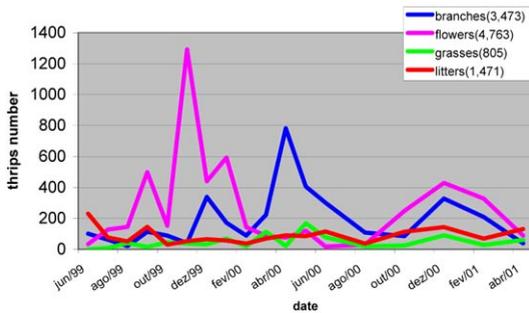


Fig. 1. Number of Thysanoptera individuals per microhabitat and per sampling occasion. Parque Estadual de Itapuã (30°22'S 51°02'W), Viamão, RS, Brazil, June/1999-april/2001.

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